

AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A surgical retractor comprising:

a frame member;

first and second retractor blades coupled to the frame member, said retractor blades opposing one another, each said retractor blade having an elongated vane and an arcuate throat configured to receive ribs in an incision in a patient's body, wherein at least one of the first and second retractor blades is movable with respect to the frame member along a first lateral axis to position the retractor blades toward or away from each other;

a foot coupled to one of the frame member and the first and second blades, the foot being located outside of a space defined between said first and second retractor blades, wherein the foot is adjustable in a vertical direction relative to the frame member and transverse to a direction in which the blades extend, and wherein the foot is rotatable, relative to said first and second blades, about an axis extending in a direction normal to said first lateral axis;

a locking mechanism for locking the foot relative to the frame member in a selected relative position along an axis which is transverse to the first axis;

an actuator for actuating a drive mechanism interconnected between said first and second retractor blades, wherein actuation of said actuator drives said mechanism to drive said foot and one of said first and second retractor blades away from the other of said first and second retractor blades; and

an actuation mechanism directly connected between said foot and one of said first and second retractor blades, wherein upon moving said foot and one of said first and second retractor blades away from the other of said first and second retractor blades, said actuation mechanism moves said foot and said one of said first and second retractor blades vertically with respect to the other of said first and second retractor blades, transverse to the direction of the first axis.

2. (Previously Presented) The retractor of claim 1, wherein the frame member comprises an elongated bar and the first and second retractor blades are respectively coupled to first and second arms coupled to the bar, one of said arms being movable with respect to the bar along the first axis.

3. (Previously Presented) The retractor of claim 1, wherein the second blade is rotatable about a second axis which is transverse to the first lateral axis, the foot being coupled to the second blade so that

the foot and the second blade rotate together about the second axis.

4. (Canceled)

5. (Currently Amended) A rib retractor for spreading apart first and second ribs to create an opening in the patient's chest, comprising:

a frame;

a first blade coupled to the frame;

a second blade coupled to the frame, the second blade opposing the first blade and being movable toward and away from the first blade along a first axis, the second blade having a rotatable connector which permits rotation of the second blade relative to the frame about a second axis transverse to said first axis, said first and second blades each having an elongated vane and an arcuate throat configured to receive the first and second ribs therein, respectively;

an actuator comprising a mechanism configured to convert a rotational movement to a translational driving force for moving at least one of the first and second blades away from and toward the other of the first and second blades; and

a foot rotatably coupled, via a coupling, to at least one of the frame and the first and second blades, the foot having a support surface configured to engage an external surface of the patient's chest, outside of the opening, said coupling permitting rotation of said foot with respect to said at least one of the frame and first and second blades in one direction, while, without any manipulation of a current configuration of said coupling that permits said rotation in one direction, and preventing rotation of said foot with respect to said at least one of said frame and the first and second blades in an opposite direction.

6. (Previously Presented) The rib retractor of claim 5, wherein:
the foot is linearly movable relative to the frame.

7. (Original) The rib retractor of claim 5, wherein:
the frame has a first arm and a second arm, the first blade being attached to the first arm and the second blade being attached to the second arm.

8. (Original) The rib retractor of claim 7, wherein:

the frame includes an elongate bar, the first and second arms being mounted to the bar, the second arm being movable along the elongate bar toward and away from the first arm along a first axis.

9. (Withdrawn) The rib retractor of claim 5, further comprising a locking mechanism which selectively permits and prevents rotation of the rotatable connector, the locking mechanism being movable between a locked position, in which rotation of the rotatable connector is prevented, and an unlocked position, in which rotation of the rotatable connector is permitted, the locking mechanism being in the locked position for spreading the first and second ribs apart without lifting the second rib, the locking mechanism being in the unlocked position to permit rotation of the rotatable connector for spreading the first and second ribs apart and lifting the second rib, wherein the locking mechanism may be moved from the locked position to the unlocked position without removing the first and second blades from the opening in the patient's chest.

Claims 10-13. (Canceled)

14. (Previously Presented) A rib retractor for spreading apart first and second ribs to create an opening in a patient's chest, comprising:

an elongate member;

a first arm coupled to said elongate member;

a first blade extending from said first arm;

a drive member movably connected to said elongate member and translatable with respect to said elongate member;

an actuator;

a drive mechanism interlinked between said actuator and said drive member, wherein actuation of said actuator moves said drive mechanism to drive said drive member;

a second arm rotatably coupled to said drive member;

a second blade opposing said first blade and coupled to said second arm;

said drive member configured to drive said second blade toward and away from said first blade, the second blade being rotatable, with said second arm, relative to the elongate member;

a shoe coupled to at least one of the said elongate member, first arm, second arm, first blade and second blade, the shoe having a support surface configured to engage the surface of the patient's chest when lifting the second rib with the second blade; and

a locking member which selectively permits and prevents rotation of said second arm and second blade relative to said elongated member, wherein when selected to permit rotation, said second arm and second blade rotate relative to said elongated member as said drive member translates said second arm and said second blade away from said first arm and said first blade, thereby also rotating said second arm and said second blade and lifting the second rib.

15. (Withdrawn) The rib retractor of claim 14, wherein said shoe is movable relative to said elongated member and said first and second arms, and said rib retractor further comprises a second locking member selectively permitting and preventing linear movement of the shoe relative to said elongated member and said first and second arms.

16. (Original) The rib retractor of claim 14, wherein:
the shoe is coupled to the second blade so that the shoe and the second blade are rotatable together.

17. (Canceled)

18. (Canceled)

19. (Withdrawn) The rib retractor of claim 14, wherein:
the locking member may be selected to prevent said rotation or to permit said rotation, without removing the first and second blades from the opening in the patient's chest.

Claims 20 - 26. (Canceled)

27. (Previously Presented) The rib retractor of claim 5, wherein said coupling comprises a ratchet and pawl mechanism that permits said rotation in said one direction and prevents said rotation in said opposite direction.

28. (Previously Presented) The rib retractor of claim 14, wherein when said locking member is engaged, said foot is rotatable relative to said second arm and said second blade in one rotational direction, and is prevented from rotating relative to said second arm and said second blade in an opposite

rotational direction, and wherein, when said locking member is disengaged, said foot is rotatable relative to said second arm and said second blade said one rotational direction as well as in said opposite rotational direction.

29. (Currently Amended) A rib retractor for spreading apart first and second ribs to create an opening in the patient's chest, comprising:

a frame;

a first blade coupled to the frame;

a second blade coupled to the frame, the second blade opposing the first blade and being movable toward and away from the first blade, the second blade having a rotatable connector which permits rotation of the second blade relative to the frame, said first and second blades each having an elongated vane and an arcuate throat configured to receive the first and second ribs therein, respectively;

an actuator for moving at least one of the first and second blades away from and toward the other of the first and second blades, wherein force applied through said actuator is applied to said at least one of said first and second blades to move said at least one of said first and second blades; and

a foot rotatably coupled, via a coupling, to at least one of the frame and the first and second blades, the foot having a support surface configured to engage an external surface of the patient's chest, outside of the opening, said coupling permitting rotation of said foot with respect to said at least one of the frame and first and second blades in one direction, and preventing rotation of said foot with respect to said at least one of said frame and the first and second blades in an opposite direction.

30. (Previously Presented) The rib retractor of claim 29, wherein said coupling comprises a ratchet and pawl mechanism that, when engaged, permits said rotation in said one direction and prevents said rotation in said opposite direction.

31. (Previously Presented) The rib retractor of claim 29, wherein said coupling, when engaged, permits rotation of said foot with respect to said at least one of the frame and first and second blades in said one direction, and prevents rotation of said foot with respect to said at least one of said frame and the first and second blades in said opposite direction; and, when disengaged, said coupling permits rotation of said foot with respect to said at least one of the frame and first and second blades in said one direction as well as in said opposite direction.